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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,745

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Carole Noutary

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REED SMITH, LLP

ATTN: PATENT RECORDS DEPARTMENT

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EXAMINER

LEE, DORIS L

ART UNIT

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4145

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,745	Applicant(s) NOUTARY, CAROLE	
	Examiner Doris L. Lee	Art Unit 4145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20060201</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. **Claim 6** objected to because of the following informalities: the limitation “polymer as a degree of polymerization” should be amended to read “polymer has a degree of polymerization”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 14-16** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 14, it is unclear if the applicant intended to recite all the combinations of styryl pyridinium and acrylate groups to be considered independently of one another or interpreted to mean [(4-(2-acryloyloxyethoxy) benzaldehyde and 4-(4-formylphenylethenyl)-1-methylpyridinium methosulfate] or [4-(2-acryloyloxyethoxy) benzaldehyde and 1-(3-ethoxycarbonylpropyl)-4-[2-(4'-formylphenyl)ethenyl]pyridinium bromide] (Bold brackets added for clarity). Appropriate correction is required.

Also regarding claim 14, the limitation “the groups” in line 3 of the claim lacks proper antecedent basis because it is unclear if it refers to the “photo cross-linkable groups” in line 1 of the claim or the “acrylate groups” in line 2 of the claim. For the purpose of this office action, the limitation “groups” in line 3 is interpreted to refer back to “photo cross-linkable groups” of line 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claim 14** is rejected under 35 U.S.C. 102(b) as being anticipated by **Davidson et al (US 5,994,033)**.

Regarding claim 14, Davidson teaches a polyvinyl alcohol (C9/Example 6) having photo cross linkable groups attached thereto (C9/Example 6) wherein the groups are styryl pyridinium (C9/L25) and acrylate groups (C9/L27) with the proviso that the groups are not derived from the groups are not derived from [(4-(2-acryloyloxyethoxy) benzaldehyde and 4-(4'-formylphenylethenyl)-1-methylpyridinium methosulfate] or [4-(2-acryloyloxyethoxy) benzaldehyde and 1-(3-ethoxycarbonylpropyl)-4-[2-(4'-formylphenyl)ethenyl]pyridinium bromide] (Bold brackets added for clarity) (C9/L25-27).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-13 and 17-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Davidson et al (US 5,994,033)** in view of **Figov (US 5,623,001)**.

Regarding claim 1, Davidson teaches an ink (C1/L1-10) comprising (i) water (C4/L57-62) and (ii) a polymer having a plurality of 1,2- and/or 1,3-diol groups along the polymer backbone (C3/L64-67) and having pendant photo cross- linkable groups attached thereto (C6/L22-24). Davidson teaches that this material is used to coat a substrate to make a screen printing stencil (C1/L10-37).

However Davidson does not teach that the ink is an ink jet ink.

Figov teaches a water soluble polymer (C1/L62) with photo cross linkable groups (C3/L52-C4/L12). Figov also teaches that this material may be used as an ink jet ink (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the material as taught in Davidson as an ink jet ink as taught in Figov. One would be motivated to do so in order to receive the expected benefit of being able to dispense the ink via an ink jet printer to pattern the stencil directly onto the substrate. They are combinable because they are concerned with the same field of endeavor, namely photo curable inks. Absent objective evidence to the contrary and based upon the teachings of the prior art, there would have been a reasonable expectation of success.

Regarding claim 2, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the polymer is a polyvinyl alcohol (C2/L4-13).

Regarding claim 3, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the pendant photos cross linkable groups are styryl pyridinium (C6/L24) and/or acrylate groups (C4/L60-65).

Regarding claim 4, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the pendant cross linkable group is present from 0.1 to 25% by weight based on the weight of the polymer (C4/L66-C5/L2).

Regarding claim 5, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the polymer is polyvinyl alcohol which is derived from polyvinyl acetate in which at least 70% of the acetate groups are hydrolysed (C5/L5-8).

Regarding claim 6, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the polymer has a degree of polymerization of 350 to 2500 (C5/L3-5).

Regarding claim 7, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the polymer is present 0.5 to 60% by weight based on the total weight of the ink (C5/L15-18 and C8/Example 4).

Regarding claim 9, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the ink further comprises UV reactive monomers and/or oligomers (C6/L48-C7/L4) such as pentaerythritol triacrylate (C6/L64, as evidenced by Afzali-Ardakani (US 4,554,562, C6/L30-36) which defines pentaerythritol triacrylate as a UV reactive monomer).

Regarding claim 10, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the ink further comprises UV reactive monomers and/or oligomers are **methacrylates** (C7/L13), epoxides or oxetanes (as evidenced by Fujikawa US 4,621,044 which defines methacrylate as a UV reactive monomer C9/L53-59).

Regarding claim 8, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the water is present from 10 to 90% by weight based on the total weight of the ink (C8/Example 4).

Regarding claim 11, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the ink further comprises a photo initiator (C5/L60-C6/L6).

Regarding claim 12, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches that the ink further comprises a colorant (C8/Example 4/pigment paste).

Regarding claim 13, modified Davidson discloses all the limitations as set forth above. In addition, modified Davidson teaches that the ink has a viscosity of less than 50 mPas at 25 C (Figov, C1/L18 and C1/L25).

Regarding claim 17, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches a method for printing on a substrate wherein ink is applied to the substrate (C9/Example 6).

Regarding claim 18, modified Davidson discloses all the limitations as set forth above. In addition, modified Davidson teaches that the ink is applied by screen printing, flexography or ink jet printing (Figov, Abstract).

Regarding claim 19, modified Davidson discloses all the limitations as set forth above. In addition, Davidson teaches a printed substrate produced by the method of claim 17 (C9/Example 6).

7. **In alternative, claims 14-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Davidson et al (US 5,994,033)**.

Regarding claim 14, assuming, arguendo, that the recited limitation requires all the groups to be considered independently from one another, Davidson teaches a polyvinyl alcohol (C9/Example 6) having photo cross linkable groups attached thereto (C9/Example 6) wherein the groups are styryl pyridinium (C9/L25) and acrylate groups (C9/L27) with the proviso that the groups are not derived from the groups are not derived from and 4-(4-formylphenylethenyl)-1-methylpyridinium methosulfate and 1-(3-ethoxycarbonylpropyl)-4-[2-(4'-formylphenyl)ethenyl]pyridinium bromide (C9/L25). Davidson also teaches that the acrylate group is a 4-(2-acryloyloxyethoxy) benzaldehyde (C9/L27).

Davidson does not teach that the acrylate group is not derived from 4-(2-acryloyloxyethoxy) benzaldehyde or 4-(2-acryloyloxyethoxy) benzaldehyde.

Davidson does teach a polyvinyl alcohol having photo cross linkable group attached (C17/Example 17) with an acrylate group which is 2-acryloyloxyethyl 4-

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formylbenzoate that does is not derived from 4-(2-acryloyloxyethoxy)benzaldehyde or 4-(2-acryloyloxyethoxy)benzaldehyde (C16/Example 24).

It would have been obvious to one of ordinary skill in the art at the time the invention to use the 2-acryloyloxyethyl 4-formylbenzoate of Davidson Example 24 and 27 as the acrylate group of Davidson Example 6 because it would amount to nothing more than a use of a known photo cross linkable acrylate group on a polyvinyl alcohol for its intended use in a known environment to accomplish entirely expected result.

Regarding claim 15 and 16, modified Davidson discloses all the limitations as set forth above. In addition, modified Davidson teaches that the groups are derivable from an acryloyloxyalkyl formylbenzoate, more specifically 2-acryloyloxyethyl 4-formylbenzoate (C16/L63) and formylphenylethenyl pyridinium, more specifically 4-(4-formylphenylethenyl)-1-methylpyridinium (C9/L25).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Doris L. Lee whose telephone number is (571)270-3872. The examiner can normally be reached on Mon - Thurs, 7:30am - 5pm EST and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on (571) 272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DLL 4/24/2008

/Basia Ridley/
Supervisory Patent Examiner, Art Unit 4145